Listing of Claims:

This listing of claims will replace all prior versions, and listings, of claims in the application:

1. (original) A method of depositing a conductive coating in a desired pattern onto a substrate comprising:

depositing a precursor onto the substrate in the desired pattern by nanolithography with use of a tip coated with the precursor,

contacting the precursor with a ligand,

applying sufficient energy to transfer electrons from the ligand to the precursor, thereby decomposing the precursor to form a conductive precipitate in the desired pattern and thus forming the conductive pattern directly on the substrate.

2. (original) The method according to claim 1, wherein the tip is a nanoscopic tip.

3. (original) The method according to claim 1, wherein the tip is a scanning probe microscopic tip.

4. (original) The method according to claim 1, wherein the tip is an atomic force microscope tip.

5. (original) The method of claim 1, wherein the coating comprises a metal with a purity of at least about 80%.

6. (original) The method of claim 1, wherein the coating comprises a metal with a thickness of less than about 10 angstroms.

7. (original) The method of claim 1, wherein the coating comprises a metal with a thickness of at least about 100 angstroms.

8. (original) The method of claim 1, wherein the precursor comprises a salt selected from the group consisting of a carboxylate, a halide, a pseudohalide, and a nitrate.

9. (original) The method of claim 1, wherein the precursor comprises a carboxylate.

10. (original) The method of claim 1, wherein the pattern comprises a circuit.

11. (original) The method of claim 1, wherein the ligand comprises a material selected from the group consisting of an amine, an amide, a phosphine, a sulfide, and an ester.

12. (original) The method of claim 1 wherein the ligand is selected from the group consisting of a nitrogen donor, a sulphur donor, and a phosphorous donor.

13. (original) The method of claim 1 wherein the precipitate comprises a metal.

14. (original) The method of claim 1 wherein the precipitate is selected from the group consisting of copper, zinc, palladium, platinum, silver, gold, cadmium, titanium, cobalt, lead,

tin, silicon and germanium.

15. (original) The method of claim 1 wherein the precipitate comprises an electrical conductor.

16. (original) The method of claim 1 wherein the precipitate comprises an electrical semiconductor.

17. (original) The method of claim 1 wherein the substrate comprises a non-conductor.

18. (original) The method of claim 1 wherein the substrate comprises at least one of a conductor and a semiconductor.

19. (original) The method of claim 1 wherein the step of applying energy comprises applying heat.

20. (original) The method of claim 1 wherein the step of applying energy comprises applying infra red radiation or UV radiation.

21. (original) The method of claim 1 wherein the step of applying energy comprises applying vibrational energy.

22. (original) The method of claim 1 wherein the precursor comprises a salt selected from the group consisting of a carboxylate, a halide, a pseudo halide, a nitrate, and the ligand comprises a material selected from the group consisting of an amine, an amide, a phosphine, a sulfide and an ester.

23. (original) The method of claim 19, wherein the precipitate is selected from the group consisting of copper, zinc, palladium, platinum, silver, gold, cadmium, titanium, cobalt, lead, tin, silicon and germanium.

24. (original) The method of claim 19, wherein the step of applying energy comprises applying radiant heat.

25. (original) A method of printing a conductive metal in a desired pattern onto a substrate comprising:

drawing a metal precursor and ligand directly onto the substrate according to the desired pattern using nanolithography with use of a tip coated with a precursor; and

decomposing the precursor by applying energy to form the conductive metal in the desired pattern, without removing from the substrate a substantial quantity of the precursor, and without removing from the substrate a substantial quantity of the metal.

26. (original) The method of claim 25, wherein the metal pattern comprises a substantially pure metal, with impurities less than about 20% by weight.

27. (original) The method of claim 25, wherein the step of decomposing comprises thermally decomposing.

28. (original) The method of claim 25 wherein the step of decomposing comprises thermally decomposing at a temperature of less than about 300°C.

29. (original) The method of claim 25, wherein the metal is selected from the group consisting of an elemental metal, an alloy, a metal/metal composite, a metal ceramic composite, and a metal polymer composite.

30. (original) A nanolithographic method comprising:

depositing a metallic precursor from a tip onto a substrate to form a nanostructure, and

subsequently converting the precursor nanostructure to a metallic deposit.

31. (original) The method according to claim 30, wherein the deposition and conversion is carried out without use of an electrical bias between the tip and substrate.

32. (original) The method according to claim 30, wherein the deposition and conversion is carried out with use of a chemical agent other than the substrate.

33. (original) The method according to claim 30, wherein the tip is a nanoscopic tip.

34. (original) The method according to claim 30, wherein the tip is a scanning probe microscopic tip.

35. (original) The method according to claim 30, wherein the tip is an AFM tip.

36. (original) The method according to claim 35, wherein the deposition and conversion is carried out without use of an electrical bias between the tip and substrate.

37. (original) The method according to claim 30, wherein the method is repeated to form a multilayer.

38. (original) The method according to claim 30, wherein the tip is adapted to not react with the precursor.

39. (original) The method according to claim 30, wherein the method is used to connect at least one nanowire with another structure.

40. (original) The method according to claim 30, wherein the method is used to connect at least two electrodes.

41. (original) The method according to claim 30, wherein the method is used to prepare a sensor.

42. (original) The method according to claim 30, wherein the method is used to fabricate a lithographic template.

43. (original) The method according to claim 30, wherein the method is used to prepare a biosensor.

44. (original) A nanolithographic method consisting essentially of:

depositing an ink composition consisting essentially of a metallic precursor from a nanoscopic tip onto a substrate to form a nanostructure, and

subsequently converting the metallic precursor of the nanostructure to a metallic form.

45. (original) The method according to claim 44, wherein the conversion is a thermal conversion without use of a chemical agent.

46. (original) The method according to claim 44, wherein the conversion is a chemical conversion carried out with use of a reducing agent.

47. (original) The method according to claim 44, wherein the reducing agent is used in the vapor state to carry out the conversion.

48. (original) The method according to claim 44, wherein the tip is an AFM tip.

49. (original) The method according to claim 44, wherein the tip comprises a surface which does not react with the precursor.

50. (original) A method according to claim 44, wherein the method is repeated a plurality of times to generate a multi-layer structure.

51. (original) A method of printing without use of electrochemical bias or reaction between the ink and substrate comprising depositing a metallic precursor ink composition onto a substrate from a tip in the form of a microstructure or nanostructure on the substrate to form an array having discreet objects separated from each other by about one micron or less.

52. (original) The method according to claim 51, further comprising the step of forming metal from the precursor.

53. (original) The method according to claim 51, wherein the discreet objects are separated from each other by about 500 nm or less.

54. (original) The method according to claim 51, wherein the discreet objects are separated from each other by about 100 nm or less.